A Joint Meteorological, Oceanographic and Sensor Evaluation Program

for Experiment S193 on Skylab

EPN 550
for the period ending

January 14, 1974

Contract NAS 9-13642

Submitted to:

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Monthly Plans and Progress Report

Data for High Winds Obtained

Ten Skylab passes using S193 in either the CTNC mode or the altimeter mode have been obtained since Dec. 4, 1973. The most intensive period was from Jan. 4, 1974 to Jan. 14, 1974. Of these ten passes seven obtained radar-radiometer data for winds at least as strong as 55 knots. NASA C130 underflights were obtained on Jan. 4 and Jan. 9, and laser wave data and wind data were obtained. The Langley AAFE Radscat was not working. The C130 used by Mr. Duncan Ross had problems with a fuel pump and made only one flight.

The British and French weather ships obtained surface truth data for all passes, both Radscat and Altimeter, that came near them. Wave records and well averaged wind speeds were obtained in every case.

The extratropical cyclone that occurred during the January 4 through 14 period, was very intense. It may prove to have been the most intense cyclone with the highest winds for the longest time over the North Atlantic of the past decade. The data from this period will undoubtedly be studied in detail for years to come. A table prepared by Dr. Vincent Cardone summarizes the passes that were obtained.

S193 Passes Requested and Obtained during SL-4

1. Dec. 4, 1973 — TRACK 6 151° W ~ 89° W CTNC L/R
Southbound over "Poppa". Ship measured up to 28 knots.
Probable 30 knots under cloud east of front.
Range 20-30 knots. Mostly crosswind.

2. Jan. 4, 1974 — TRACK 29/30 55° W ~ 5° W CTNC
Eastbound across intense ETC (952 mb).
Surface winds > 50 Kts. east of N. F.
NASA C130 underflight at 500 feet obtained good wind and laser data in 50 knot winds but RADSCAT inoperative. Ground truth at ships "J" and "K".
Range 30-55 knots. Mostly 45° off upwind-downwind.

3. Jan. 6, 1974 — TRACK 58/59 Altimeter 75 W ~ 65 W
CTNC /R 62° W ~ 46° W Altimeter 45° ~ 6° W
Eastbound across strong ETC (958 mb).
NASA C130 underflight aborted - no data taken.
Range of winds in CTNC mode 15-40 knots at 45° to upwind - downwind.
NOAA/A. F. C130 support off Norfolk under altimeter - measured 6 knots, 3 foot waves.

4. Jan. 7, 1974 — TRACK 71 Altimeter 75 W ~ 62° W
CTNC R/L 62° W ~ 45° W Altimeter 44° W ~ 25° W
Weakening ETC (960 mb)
No aircraft support.
Range in CTNC mode 5-30 knots. 45° off upwind-downwind.

5. Jan. 8, 1974 — TRACK 14/15 Altimeter and CTNC
Weakening ETC (963 mb)
No aircraft support
Range 15-35 knots Some upwind-downwind

6. Jan. 9, 1974 — TRACK 28/29 CTNC R/L 62° W ~ 31° W
Some altimetry before and after above.
Gradient Restrengthened.
NASA C130 support, laser and winds only, at 2 points with 35-50 knot winds.
Range in CTNC mode 5-50 knots, close to upwind-downwind.

7. Jan. 11, 1974 — TRACK 58/59 CTNC R/L all the way.
Gradient weakened
NASA underflight cancelled.
Range 25-40 knots mostly 45° to upwind-downwind.
Some 35 knots upwind-downwind under cloud vicinity "J", "K".

8. Jan. 12, 1974 — TRACK 1/2 Altimeter all the way.
No underflights.

9. Jan. 13, 1974 — TRACK 15/16 Altimeter all the way.
No underflights.

10. Jan. 14, 1974 — TRACK 29/30 Altimeter all the way. No underflights.

Future Plans

During the remainder of SL 4, with southbound passes over the USA and northbound passes near POPPA in the North Pacific the objectives of EPN 550 will be

1] Obtain aircraft underflights with the Langley AAFE Radscat for winds over 13 knots, such as 25 and 35 knots, and if possible 40 knots.

2] Extend several passes in the CTNC mode over the sub-tropical high and trade wind region of the North Atlantic so as to get data for flat calm winds (the lowest is 6 knots or so at present) and for the 15 to 20 knot range of the trade winds.

3] Obtain a pass or two in the 25 to 35 knot range to fill in the area of the variable winds objective. The North Pacific will offer numerous opportunities near Weather Ship Poppa during the week of January 20th.